



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY
SCHOOL OF INFORMATICS AND INNOVATIVE SYSTEMS
DEPARTMENT OF INFORMATION SYSTEMS & TECHNOLOGY
UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN
INFORMATION AND COMMUNICATION TECHNOLOGY
4TH YEAR 1ST SEMESTER 2023/2024 ACADEMIC YEAR
MAIN CAMPUS

COURSE CODE: ITB 2407

COURSE TITLE: INFORMATION SYSTEMS RESEARCH

EXAM VENUE: LAB 13

STREAM: BIS

DATE: 7/1/25

EXAM SESSION: 9-11.00 AM

TIME: 2 HRS

INSTRUCTIONS

- 1. Answer Question 1 (Compulsory) and ANY other TWO questions**
- 2. Candidates are advised not to write on the question paper**
- 3. Candidates must hand in their answer booklets to the invigilator while in the examination room**

Question 1 [30 marks]

The relationship between class attendance and academic performance has been an important area of research, with a positive association being posited between the two. The setting for this study is an International Branch Campus (IBC) of a British university that needs to demonstrate the quality of its service delivery both to the parent institution and to the fee-paying students. The study used a dataset of over 900 students in an undergraduate degree programme and subject it to statistical techniques, namely quantile regression and two-stage quantile regression. The results show that class attendance has a beneficial influence on academic performance and this benefit persists at higher percentile of grades. The study proposes that IBCs could consider an attendance policy that encourages students to attend classes and an attendance system for tracking students attendance (*Ajit Karnik, Pallavi Kishore, and Mohammad Meraj*).

- a) Propose a title for your proposed solution **(2 marks)**
- b) Identify the research problem **(2 marks)**
- c) State the purpose of this study **(2 marks)**
- d) State any three research Objectives **(3 marks)**
- e) State any three research questions **(3 marks)**
- f) Discuss any four benefits of the proposed solution **(4 marks)**
- g) Briefly discuss the methodology you would use to develop the solution **(4 marks)**
- h) Briefly discuss the system analysis phase and identify any four deliverables **(10 marks)**

Question 2 [20 marks]

The purpose of the unit ITB2407 is to provide the student with knowledge on Information Systems Research. It also prepares students to understand the process, purpose and goals of academic literature review. Students are expected to prepare research concept and a project proposal at the end of the semester

- a) Briefly discuss the structure and contents of the research concept. What are the expected deliverables **(5 marks)**
- b) Using your own project proposal you presented in this course discuss the structure and the content of a project proposal. Identify the key deliverable. **(15 marks)**

Question 3 [20 marks]

- a) An abstract allows you to elaborate upon each major aspect of the project and helps readers decide whether they want to read the rest of the project. Therefore, enough key information must be included to make the abstract useful to someone who may want to examine your work. Briefly discuss any five important things to include in an abstract? **(5 marks)**

- b) One of the most challenging things in your proposal writing is identifying and clearly articulating the problem statement. Briefly discuss at least *five* useful resources that helped you to formulate your problem. Please be specific. **(5 marks)**
- c) You have been offered a job as a Technical Information Officer in charge of marketing department with a start up online marketing organization based in Nairobi Kenya. You have been asked to induct new trainees on the process of research. Identify the key components of a research process that you feel the new inductees should know. Assume they will conduct research type of projects. **(10 marks)**

Question 4 [20 marks]

The goal of a research proposal is to present and justify the need to study a research problem and to present the practical ways in which the proposed study should be conducted. The design elements and procedures for conducting the research are governed by standards within the predominant discipline in which the problem resides, so guidelines for research proposals are more exacting and less formal than a general project proposal.

- a. Research proposal must address three basic questions. Discuss **(3 marks)**
- b. Identify and discuss four questions that should be addressed under the “Introduction”. **(4 marks)**
- c. A well-articulated background information is important in understanding your research proposal. Briefly discuss any five key points that must be addressed. **(5 marks)**
- d. Briefly discuss any three mistakes you should avoid and that is likely to lead to failure to successfully complete your proposal on time. **(3 marks)**
- e. Briefly discuss any five questions to ask in order to address the potential implications of your study. **(5 marks)**

Question 5 [20 marks]

- a) Using an illustration discuss the “research process” in quantitative research. **(10 marks)**
- b) Discuss the differences between quantitative, qualitative and design research. In your discussion, include any research technique in each category. **(10 marks)**

Question 4 [20 marks]

You have been offered a job as a Technical Information Officer in charge of marketing department with a start up online marketing organization based in Nairobi Kenya. You have been asked to induct new trainees on the process of research. Identify the key components of a research process that you feel the new inductees should know. Assume they will conduct research type of projects.

(10 marks)

- Title
- Abstract
- Chap 1 – Introduction
 - Background information
 - Problem statement
 - Objectives
 - Research question
 - Scope/Limitations/Significance
- Chap 2 – Literature Review
- Chap 3 – Methodology
 - Research design
 - Questionnaire
 - Data collection
 - Sample/Population
- Chap 4 – Data Analysis
- Chap 5 – Discussion/Conclusion

Question 5 [20 marks]

- c) Using an illustration discuss the “research process” in quantitative research. (10 marks)
- d) Discuss the differences between quantitative, qualitative and design research. In your discussion, include any research technique in each category. (10 marks)

Answers

a) Research Process - (2 mks @ x any 5 points)

- i) Identifying the Research Problem
 - Define the problem or question that the research aims to address.
 - Clearly articulate the objectives of the study.
- ii) Review of Literature:
 - Conduct a thorough literature review to understand existing research related to the topic.
 - Identify gaps, theories, and concepts that will inform your study.
- iii) Formulating Hypotheses or Research Questions:

- *Develop clear and testable hypotheses or research questions based on the literature review.*
 - *Hypotheses are statements predicting the relationship between variables.*
 - *Operationalization of Variables:*
 - *Clearly define and operationalize the variables of interest. This involves specifying how variables will be measured or manipulated.*
- iv) *Research Design:*
- *Choose an appropriate research design (e.g., experimental, correlational, cross-sectional, longitudinal) based on the nature of the research question.*
 - *Define the target population and select a representative sample.*
 - *Consider sampling techniques such as random sampling, stratified sampling, or convenience sampling.*
- v) *Data Collection:*
- *Collect data using standardized instruments, surveys, experiments, or other methods.*
 - *Ensure data collection methods are reliable and valid.*
- vi) *Data Analysis:*
- *Choose appropriate statistical methods for data analysis.*
 - *Common techniques include descriptive statistics, inferential statistics (e.g., t-tests, ANOVA, regression), and multivariate analyses.*
- vii) *Interpretation of Results:*
- *Interpret the statistical results in the context of the research question.*
 - *Discuss the implications of the findings and their relevance to existing literature.*
- viii) *Drawing Conclusions:*
- *Draw conclusions based on the results and assess the validity and generalizability of findings.*
- ix) *Report Writing:*
- *Document the research process and findings in a formal research report or article.*
 - *Include sections such as introduction, literature review, methodology, results, discussion, and conclusion.*

b) Differences between quantitative, qualitative and design research. (3 mks @ x any 3categories)

Category	Quantitative	Qualitative	Design
<i>Nature of research</i>	<ul style="list-style-type: none"> • <i>Involves the collection of numerical data and relies on statistical analysis.</i> • <i>It seeks to quantify relationships, patterns, and trends.</i> • <i>The data is often collected through structured surveys, experiments, or observational methods.</i> 	<ul style="list-style-type: none"> • <i>Focuses on non-numerical data such as words, images, or observations.</i> • <i>It aims to explore in-depth understanding, context, and subjective experiences.</i> • <i>Data collected through interviews, focus groups, and participant observation</i> 	<ul style="list-style-type: none"> • <i>A combination of both quantitative and qualitative approaches.</i> • <i>It focuses on understanding user needs, behaviors, and experiences to inform the design of products, services, or systems.</i>

<i>Data analysis</i>	<ul style="list-style-type: none"> • <i>Involves statistical analysis to identify patterns, relationships, and significance.</i> • <i>It often uses tools such as SPSS, Excel, or statistical software for data analysis.</i> 	<ul style="list-style-type: none"> • <i>Data analysis is typically interpretative and may involve coding, categorization, and thematic analysis.</i> • <i>Researchers often use software like NVivo or manually analyze the data.</i> 	<i>Analysis methods vary but may include quantitative analysis for certain aspects (e.g., usability metrics) and qualitative analysis for understanding user experiences and behaviors</i>
<i>Sample size and generalizability</i>	<ul style="list-style-type: none"> • <i>Usually involves larger sample sizes and aims for generalizability to a broader population.</i> • <i>Statistical techniques are used to make inferences about the population based on the sample.</i> 	<ul style="list-style-type: none"> • <i>Typically uses smaller sample sizes, and the emphasis is on in-depth understanding rather than generalizability.</i> • <i>Findings are often context-specific and may not be applicable to a wider population</i> 	<ul style="list-style-type: none"> • <i>Sample sizes can vary, and the focus may be on understanding specific user groups.</i> • <i>Generalizability may not be the primary goal; instead, insights inform design decisions for a particular context</i>
<i>Research questions</i>	<i>Often addresses questions related to the relationships between variables, cause-and-effect, and the extent of phenomena.</i> <i>Hypotheses are tested.</i>	<i>Focuses on exploring complex phenomena, understanding social processes, and generating theories. Research questions are open-ended</i>	<i>Addresses questions related to user needs, preferences, and behaviors to inform the design process. Questions may include aspects of both quantitative and qualitative inquiry.</i>
<i>Role of researcher</i>	<i>Aims for objectivity and attempts to minimize the researcher's influence. Data collection is often standardized.</i>	<i>Recognizes the subjective nature of research and acknowledges the researcher's role in shaping the study. Data collection is often more flexible and interactive.</i>	<i>Involves collaboration with users and stakeholders. The researcher's role may include empathy, ideation, and prototyping in addition to data collection and analysis</i>